

# **HUNTSVILLE**

## **water pollution control plant**

1968

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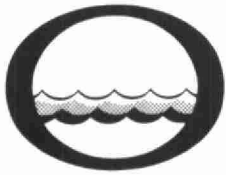
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*Water management in Ontario*

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Water Resources  
Commission

135 St. Clair Ave. W.  
Toronto 7  
Ontario


We are pleased to present you with the Operating Summary for the water pollution control facilities operated for you during 1968.

Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.

  
D. S. Caverly,  
General Manager.

  
D. A. McTavish, P. Eng.,  
Director,  
Division of Plant Operations.

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**HUNTSVILLE**  
**water pollution control plant**

operated for

**THE TOWN OF HUNTSVILLE**

by the

**ONTARIO WATER RESOURCES COMMISSION**

**1968 ANNUAL OPERATING SUMMARY**

## FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.

## CONTENTS

Title Page . . . . .	i
Foreword . . . . .	ii
'68 Review . . . . .	1
Project Costs . . . . .	2
Operating Costs . . . . .	3
Process Data . . . . .	5
Conclusions . . . . .	Inside back cover

## **'68 REVIEW**

The total cost of operating the project in 1968 was \$13,293.28, compared to \$10,947.58 in 1967. The cost per million gallons treated was \$137.44 compared to \$130.40 in 1967. It should be noted that a town employee assists in the operation of the project and his salary is not included in the operating costs.

A total of 96.72 million gallons was treated in 1968 for an average of 264,000 gallons per day compared to 230,000 gallons in 1967. The design plant flow of 250,000 gallons was exceeded approximately 58 percent of the time. A considerable amount of storm water was received at the plant.

The raw sewage had an average concentration of 133 mg/l BOD and 179 mg/l suspended solids. This indicates dilution of the sewage by surface water.

The final effluent had an average concentration of 13 mg/l BOD and 18 mg/l suspended solids, which indicated a satisfactory 90 percent reduction for both BOD and suspended solids.

A total of 2,889 pounds of chlorine was used to disinfect the final effluent and 1540 cubic yards of digested sludge was hauled by tank truck.

The project staff carried out inspection and maintenance of the sewer system and pumping stations.



## PROJECT COSTS

NET CAPITAL COST (Final)	
Long Term Debt to OWRC	<u>\$452,388.75</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	\$ Nil
Net Operating	\$ 13,293.28
Debt Retirement	-
Reserve	1,500.00
Interest Charged	<u>25,398.65</u>
TOTAL	<u>\$ 40,191.93</u>

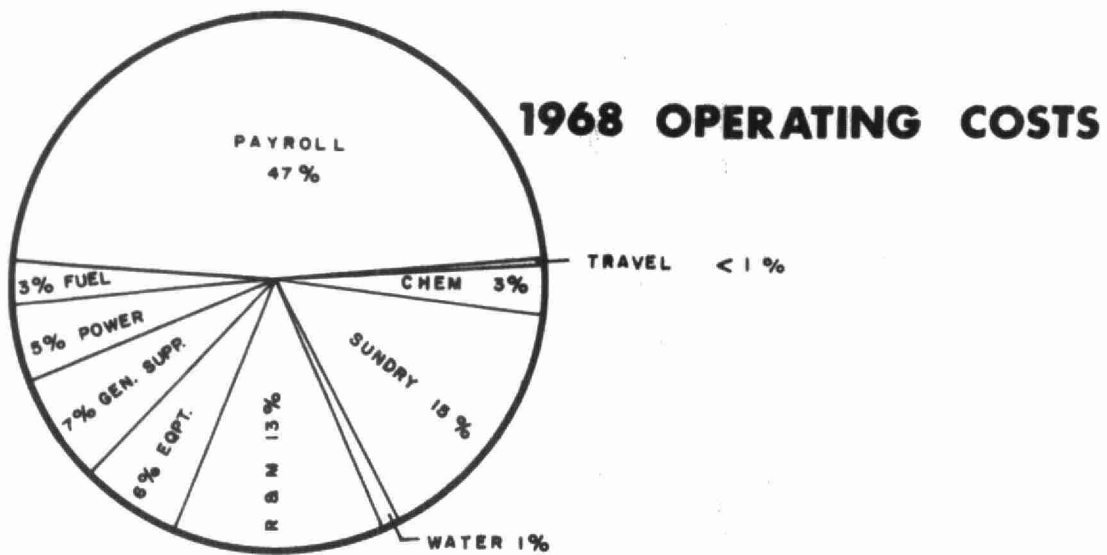
### RESERVE ACCOUNT

Balance at January 1, 1968	\$ 24,819.16
Deposited by Municipality	1,500.00
Interest Earned	1,528.90
	<u>          </u>
	\$ 27,848.06
Less Expenditures	<u>          </u>
Balance at December 31, 1968	<u>\$ 27,848.06</u>

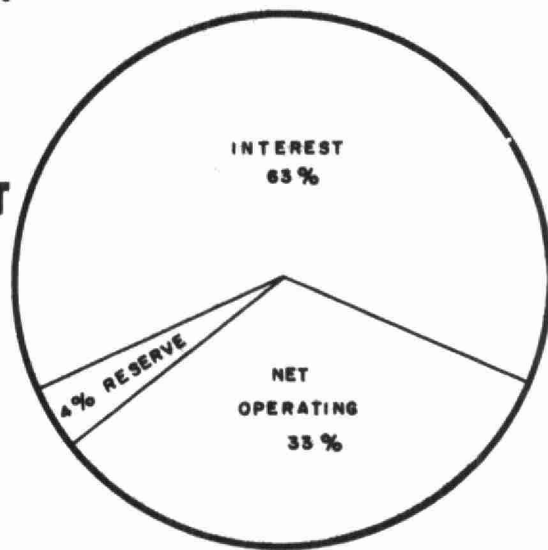
## Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAY ROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER	TRAVEL
JAN	514.84	415.60	-	-	-	-	20.00	-	69.00	10.24	-	-
FEB	1362.19	401.55	-	48.63	60.38	-	69.95	-	675.11	95.47	11.10	-
MAR	1089.68	661.67	-	95.90	87.05	-	80.41	-	67.42	97.23	-	-
APRIL	1036.41	426.13	-	-	60.42	-	56.05	95.41	275.50	110.50	12.40	-
MAY	1204.07	436.67	-	35.30	67.75	141.75	48.35	24.94	165.20	284.11	-	-
JUNE	789.61	429.65	-	22.00	44.62	-	109.45	-	51.62	110.77	21.50	-
JULY	1060.67	493.19	-	40.90	55.15	-	149.45	126.85	-	195.13	-	-
AUG	1335.52	607.43	-	25.30	33.68	-	58.98	400.07	175.36	9.30	25.40	-
SEPT	961.41	465.09	-	20.02	46.09	148.37	-	24.29	71.08	186.47	-	-
OCT	846.55	450.39	-	25.30	25.94	-	82.71	54.76	15.14	169.11	23.20	-
NOV	1072.20	415.60	-	30.30	28.04	-	101.22	-	-	497.04	-	-
DEC	2020.13	1044.26	-	57.41	112.73	148.37	122.24	81.90	144.17	247.27	15.80	45.98
TOTAL	13293.28	6247.23	-	401.06	621.85	438.49	898.81	808.22	1709.60	2012.64	109.40	45.98

\* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$1,408.45



### TOTAL ANNUAL COST



### Yearly Operating Costs

YEAR	M.G.TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1964	63.247	\$10,121.07	\$159.75	12 cents
1965	66.647	9,949.50	149.29	11 cents
1966	97.467	10,925.38	112.09	8 cents
1967	83.953	10,947.58	130.40	11 cents
1968	96.72	13,293.28	137.44	10 cents

## **Process Data**

A total of 96.72 million gallons was received at the plant for an average daily flow of 264,000 gallons compared to 230,000 gallons in 1967 and 267,000 gallons in 1966. The plot of the average daily flows shows a continued increase up to 1968.

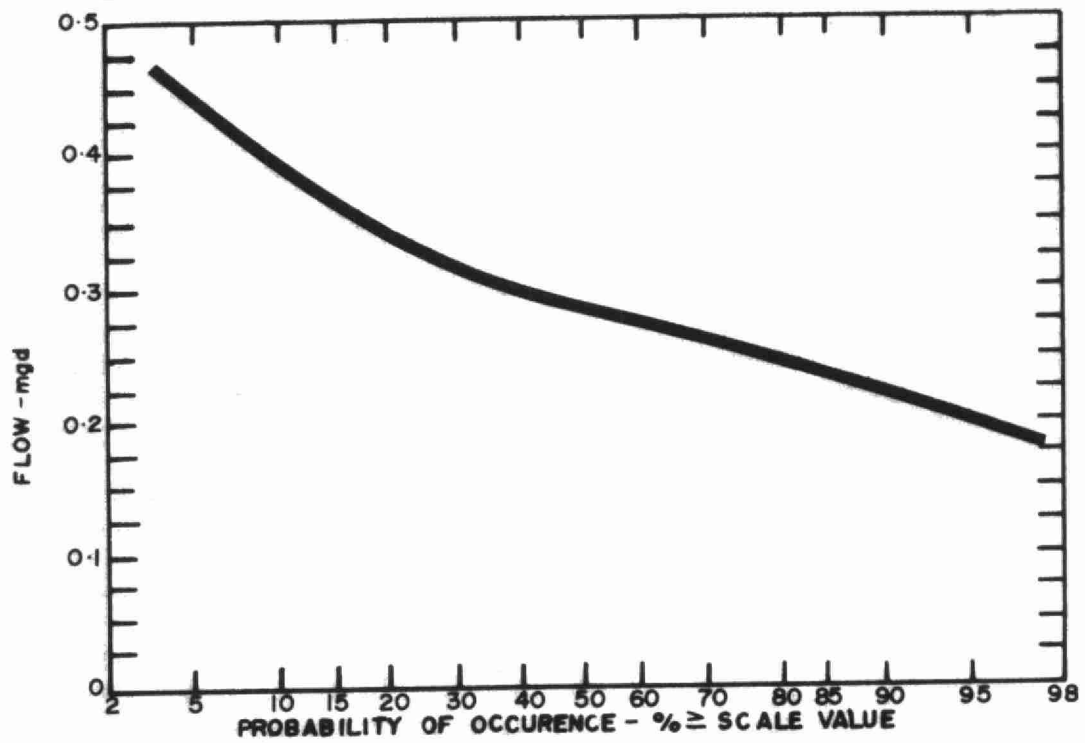
The dry weather design flow of 250,000 gallons per day was exceeded approximately 58 percent of the time.

There was still a considerable amount of surface water being treated.

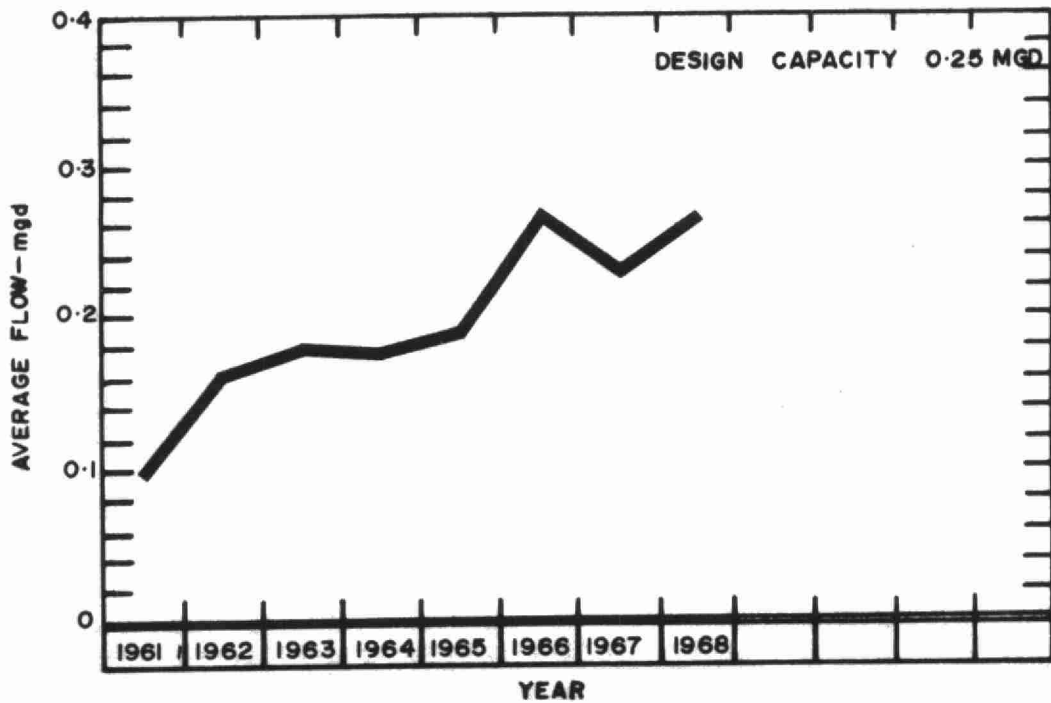
A total of 2,889 pounds of chlorine was used during the year to disinfect the final effluent at an average dosage of 3.0 mg/l.

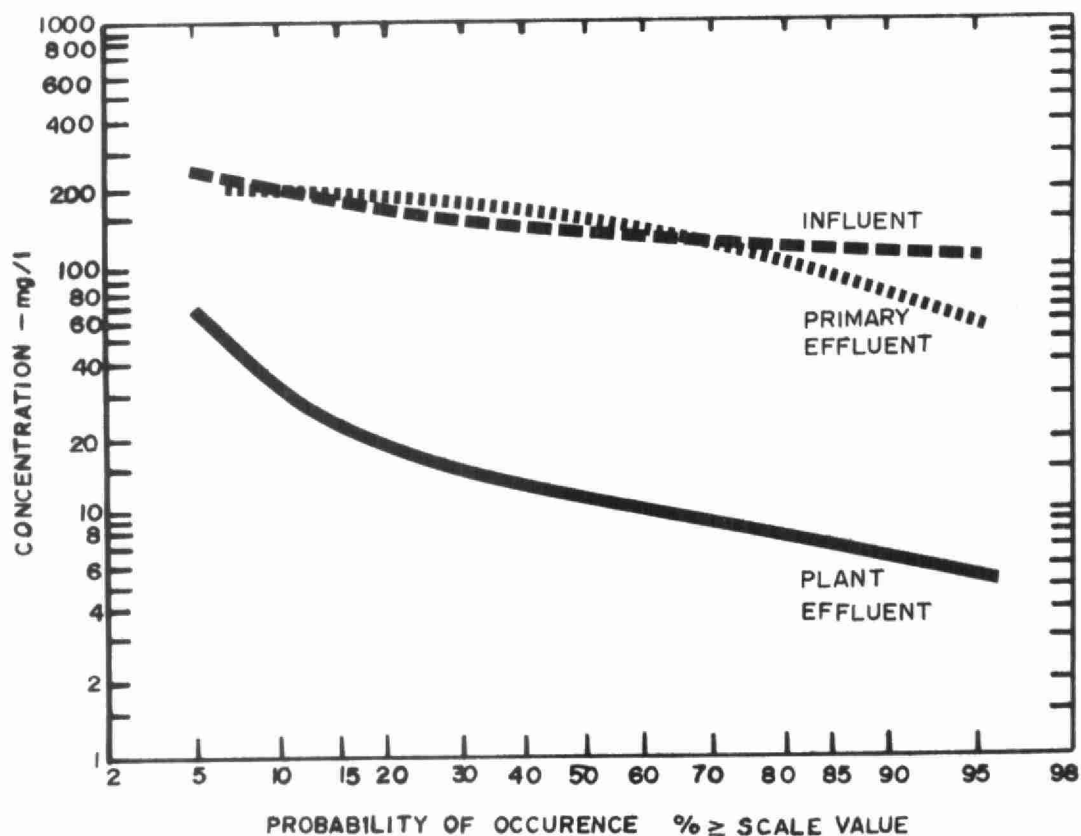
## PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg	CHLORINE USED lbs.	DOSAGE mg/l
JAN	6.51	.210	.249	.056	225	3.4
FEB	6.61	.228	.334	.106	156	2.4
MAR	8.75	.282	.480	.173	241	2.7
APR	11.33	.378	.584	.259	198	1.8
MAY	8.99	.290	.417	.189	266	3.0
JUN	7.72	.257	.396	.038	91	3.5
JUL	7.43	.240	.335	.144	208	2.8
AUG	8.52	.275	.388	.209	404	4.7
SEPT	6.78	.226	.571	.189	367	5.4
OCT	8.02	.259	.368	.104	276	3.4
NOV	7.82	.261	.428	.085	243	3.1
DEC	8.24	.266	.470	.174	214	2.6
TOTAL	96.72	-	-	-	2889	-
AVERAGE	-	.264	-	-	241	3.0

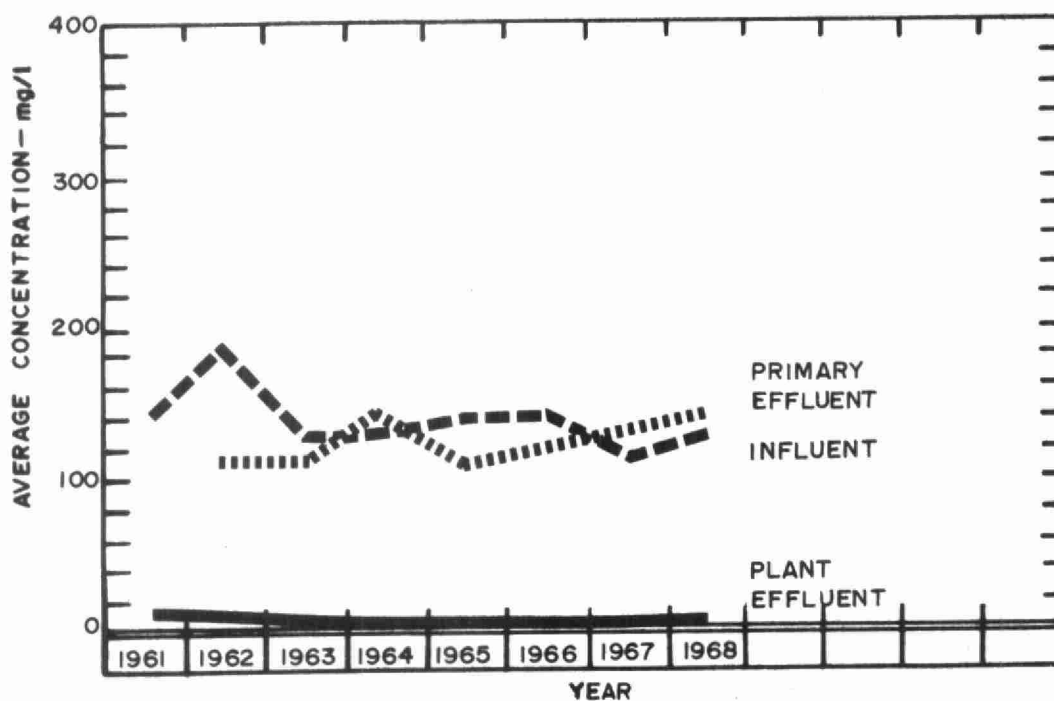


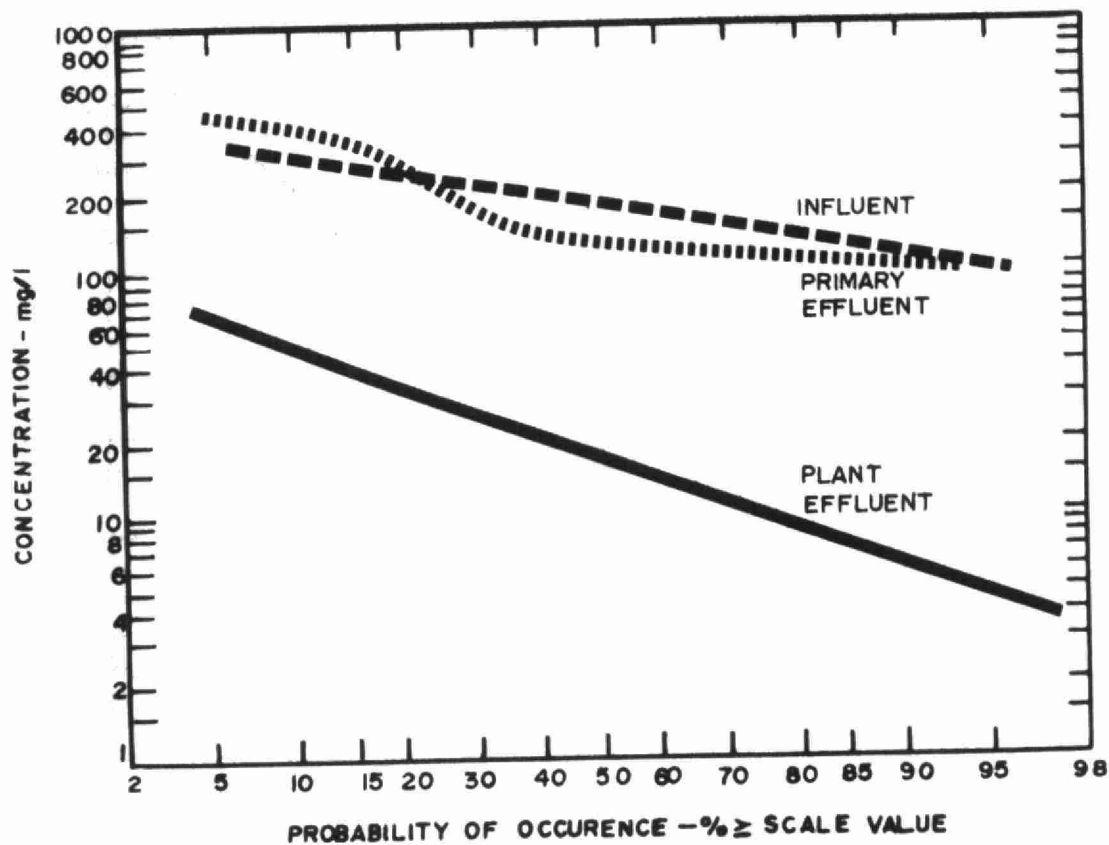
## FLOWS



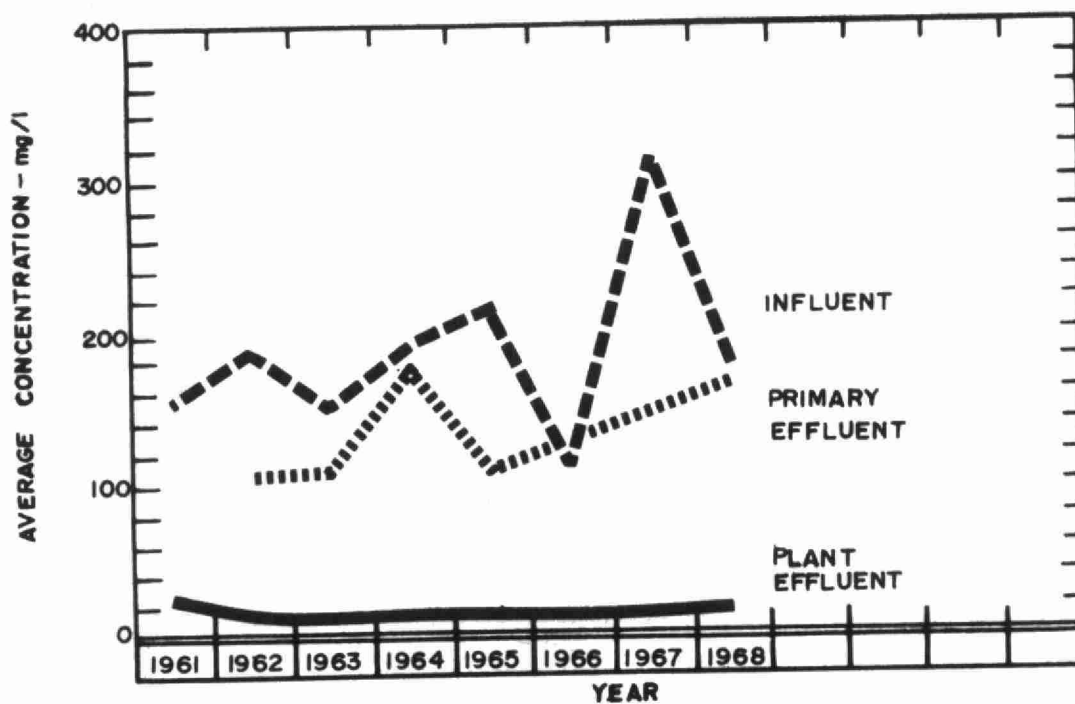


## BIOCHEMICAL OXYGEN DEMAND





## SUSPENDED SOLIDS





## PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT
	INF CONC <sup>N</sup> mg/l	EFF CONC <sup>N</sup> mg/l	RED <sup>N</sup> %	REMOVAL 10 <sup>3</sup> lb	INF CONC <sup>N</sup> mg/l	EFF CONC <sup>N</sup> mg/l	RED <sup>N</sup> %	REMOVAL 10 <sup>3</sup> lb	REMOVAL ft <sup>3</sup>
JAN	86	7	92	5.16	379	10	97	34.02	11
FEB	150	9	94	9.30	146	12	92	8.86	8
MAR	132	10	92	10.70	95	21	88	6.47	12
APR	71	7	90	7.22	89	23	74	7.48	11
MAY	-	-	-	-	-	-	-	-	6
JUN	160	4	98	12.04	100	1	99	7.64	30
JULY	163	16	90	10.95	121	27	78	7.83	20
AUG	65	56	14	0.77	330	54	84	23.50	19
SEPT	160	11	93	10.10	142	11	92	8.88	53
OCT	177	6	97	13.71	266	9	97	20.66	17
NOV	170	2	99	13.14	119	7	94	8.76	9
DEC	-	-	-	-	-	-	-	-	21
TOTAL	-	-	-	-	-	-	-	-	217
AVERAGE	133	13	90	9.31	179	18	90	13.41	18

### COMMENTS

The average strength of the raw sewage was 133 mg/l BOD and 179 mg/l suspended solids. The average strength of the final effluent was 13 mg/l BOD and 18 mg/l suspended solids.

The BOD concentration was within the OWRC objective of 15 mg/l for final effluents, and the suspended solids concentration was slightly above it.

The average reduction of 90 percent for both BOD and suspended solids was satisfactory. An average of 4.65 tons of BOD and 6.70 tons of suspended solids was removed per month.

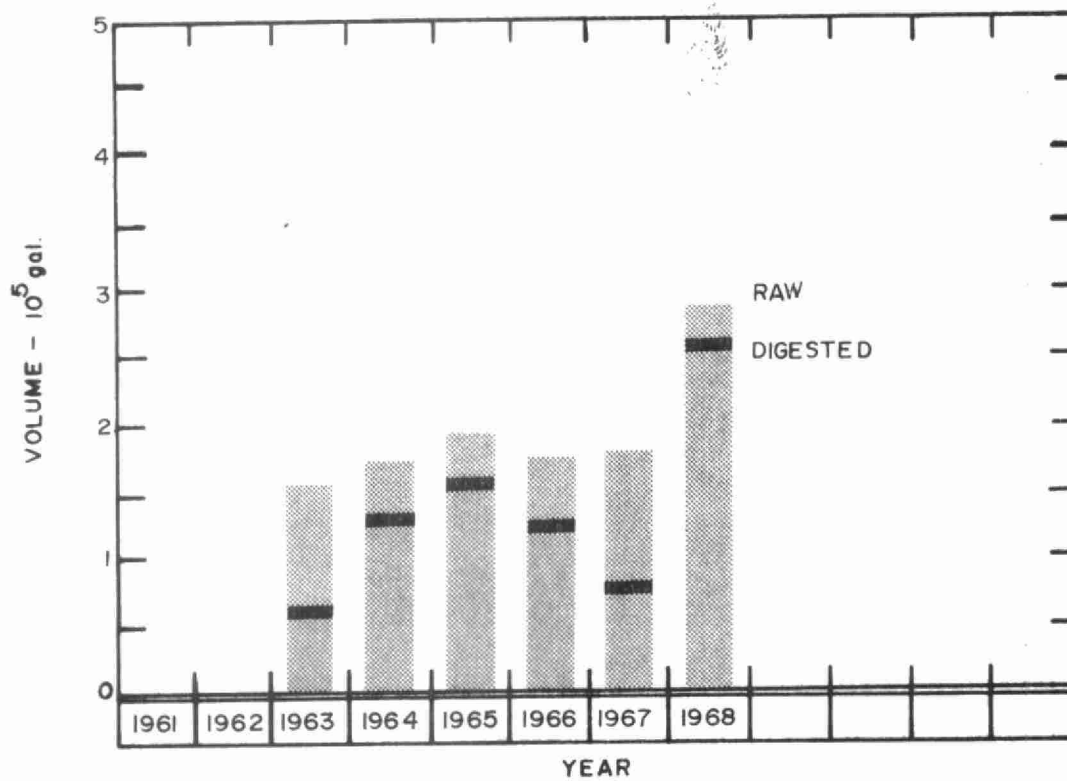
An estimated 217 cubic feet of grit was removed, for an average of 2.2 cubic feet per million gallons of raw sewage.

# AERATION

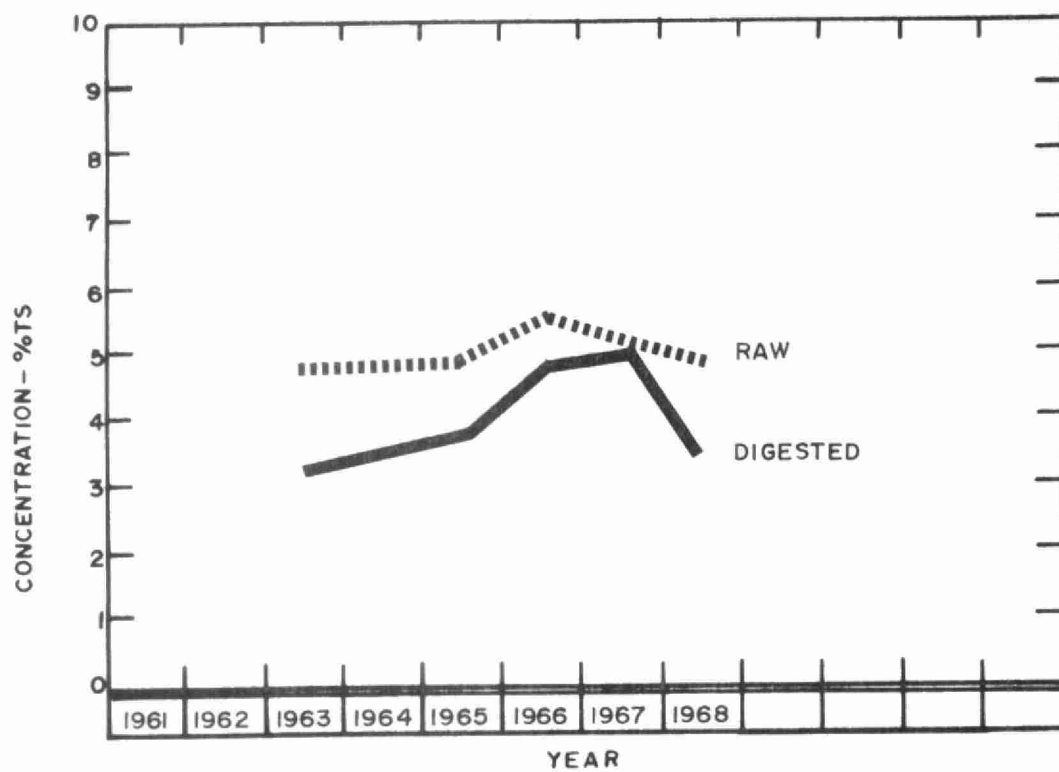
MONTH	AVERAGE FLOW mgd	PRIMARY EFF		SECONDARY EFF		MLSS CONC <sup>N</sup> mg/l	F/M $\left(\frac{\text{lb BOD}}{\text{lb MLSS}}\right)$	AIR USED $\left(\frac{1000 \text{ ft}^3}{\text{lb BOD}}\right)$ REMOVED	WASTE SLUDGE lb
		BOD CONC <sup>N</sup> mg/l	SS CONC <sup>N</sup> mg/l	BOD CONC <sup>N</sup> mg/l	SS CONC <sup>N</sup> mg/l				
JAN	.210	-	-	7	10	880	-	-	-
FEB	.228	235	210	9	12	930	.65	-	-
MAR	.282	160	249	10	21	900	.57	-	-
APRIL	.378	112	173	7	23	720	.68	-	-
MAY	.290	-	-	-	-	890	-	-	-
JUN	.257	155	94	4	1	700	.65	-	-
JUL	.240	114	101	16	27	680	.46	-	-
AUG	.275	65	167	56	54	530	.39	-	-
SEPT	.226	-	-	11	11	540	-	-	-
OCT	.259	150	135	6	9	680	.65	-	-
NOV	.261	134	163	2	7	840	.47	-	-
DEC	.266	-	-	-	-	940	-	-	-
TOTAL	-	-	-	-	-	-	-	-	-
AVERAGE	.264	141	162	13	18	780	.56	-	-

## COMMENTS

Air is supplied by mechanical aeration, and therefore the quantity of air cannot be measured. The primary effluent had an average concentration of 141 mg/l BOD and the average concentration of the mixed liquor suspended solids was 780 mg/l. The average aeration tank loading was 56 lbs. of BOD per 100 pounds of MLSS or an F/M ratio of 0.56.



## DIGESTION



## SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME 10 <sup>4</sup> gal	T. S. %	V. S. %	VOLUME 10 <sup>4</sup> gal	T. S. %	V. S. %	VOLUME 10 <sup>4</sup> gal	T. S. %	LIQUID yd <sup>3</sup>	DEWATERED yd <sup>3</sup>
JAN	1.63	5.6	66	1.72	4.1	42	-	1.3	102	0
FEB	1.57	4.2	67	1.31	2.0	45	.18	0.3	78	0
MAR	2.20	6.6	-	2.20	1.8	-	-	3.4	130	0
APR	2.85	5.3	-	3.64	4.4	-	-	3.9	216	0
MAY	6.73	-	-	2.02	-	-	-	-	120	0
JUN	1.09	-	-	.61	-	-	-	-	36	0
JUL	1.56	4.8	-	3.34	4.2	-	-	-	198	0
AUG	3.21	8.9	79	3.13	4.6	44	-	1.5	186	0
SEPT	* .64	3.7	63	2.02	4.5	41	-	0.2	120	0
OCT	2.32	4.3	59	2.53	2.3	44	-	0.2	150	0
NOV	2.24	4.0	68	2.12	2.8	51	-	1.6	126	0
DEC	2.23	-	-	1.31	-	-	-	-	78	0
TOTAL	28.27	-	-	25.85	-	-	-	-	1540	0
AVERAGE	2.36	4.9	67	2.15	3.4	45	-	1.6	128	0

\* Integrator defective

### COMMENTS

A total of 282,270 gallons of raw sludge was pumped to the digester and a total of 258,500 gallons of digested sludge was removed from the digester. The volatile reduction was approximately 57 percent.

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## **CONCLUSIONS**

The plant is operating near its hydraulic design load but is treating a weak sewage, a result of dilution by surface water. The plant provided a satisfactory treatment.

## **RECOMMENDATIONS**

The programme of storm water separation should be continued, so that the effective life of the plant may be extended, avoiding a large capital outlay to treat storm water.



*Water management in Ontario*